MEMORANDUM

Special Provisions Section 10-1.13 "Progress Schedule (Critical Path Method)" Memo of Understanding

TO: Brian Petersen
Project Director
American Bridge/Fluor, A JV
375 Burma Road
Oakland, CA 94607

FROM: Peter Siegenthaler
Resident Engineer
Department of Transportation-Toll Bridge Program

DATE: November 30, 2010

This document will serve as a Memorandum of Understanding for the path forward with regards to schedule submissions by the Contractor and reviews by the Department associated with the revised CPM schedule specs. It is anticipated that the approved specification revisions coupled with this Memo of Understanding will provide the project with a schedule that is flexible enough to quickly mitigate future impacts or delays.

The Department and the Contractor agree to mutually act to mitigate all potential impacts to the "Readiness for Seismic Safety Opening Maximum Incentive Date (SSO) (August 28, 2013)," and the "Contract Completion Date (CCD) (August 24, 2014)" to the maximum extent possible, regardless of the cause or the party responsible for the impact. If such mutual acts by the parties do not fully mitigate said potential impacts, a commensurate time extension to the SSO date and/or the CCD as well as an adjustment in compensation, will be made in accordance with the provisions of the Contract and attached CCO 171.

The Department and ABFJV, in CCO 160S0, agreed to amend Special Provisions Section 10-1.13 via a future CCO. The parties agree the modifications proposed in CCO 171 to Special Provision Section 10-1.13 "Progress Schedule (Critical Path Method)" gives the project the best possible chance of meeting SSO and CCD set out in CCO 160.

The following section lists the items agreed to:

1. SP 10-1.13 Progress Schedule, "Monthly Update Schedules" and "Schedule Revisions" sections will be revised as shown in CCO 171 to allow the Contractor to make changes to the schedule without first obtaining permission from the Department. Contractor will submit an analysis showing the effect of the schedule changes and the Department will continue to review and provide comments in the category "A, B, C" format.

2. The Department will strive to meet or exceed the proposed review period of 5 working days, and will continue to provide feedback immediately when potential issues arise during the review. It is expected that ABFJV will continue to modify the submitted CPM schedule to accurately reflect the execution of the work regardless of its acceptance status. Additionally, it is understood that the milestone dates will likely change each month.

3. SP 10-1.13 Progress Schedule, "Time Impact Analysis" section will be revised as shown in CCO 171 to allow the inclusion of schedule impacts in the next update prior to the approval of a TIA. A separate TIA submittal in accordance with the Time Impact Analysis section of the Contract will still be required.

4. Contractor has the right to finish the work early (SSO as well as remaining scope after SSO). As such, work will be shown according to the best known sequence, regardless of whether or not it is required for SSO. Should it be found that portions of non-SSO work will not be able to be completed prior to SSO, Contractor reserves right to move work to the post-SSO timeframe. Contractor will keep the Department informed of its decision to postpone the work and provide explanation for the schedule change.

5. Schedule float earned by Contractor in the execution of the work shall be considered a resource. Float will be calculated against the SSO date (28-Aug-13) and Project Completion date (24-Aug-14). Should either of these dates be impacted by the inclusion of Extra Work, Contractor will submit a TIA detailing the impact. The TIA will be evaluated and equitable compensation will be provided once allocation of responsibility is determined.

6. Contractor shall incorporate Department's objective review comments in the next Monthly Schedule Update.

7. A narrative report shall be submitted with each Monthly Schedule Update. In an effort to help streamline the narrative report, SP 10-1.13 Progress Schedule, "Monthly Update Schedules" section will be revised as shown in CCO 171 to reflect the information required in the narrative report.

8. 4-Week Schedules will contain construction and other schedule information generated directly from the P6 schedule. Additionally, the Contractor will also provide the weekly operations schedule and P6 fabrication schedule from ZPMC's facility in China. It is understood that the weekly operations schedule is used solely as a planning tool for ABFJV superintendants; it is not a Contract Document nor can it be utilized for any Contractual purposes (i.e. for comparison to formally submitted Schedules) and is offered exclusively as a courtesy to the Department.

Specification changes provided in CCO 171 are mutually agreed to help streamline the schedule submittal process and to facilitate the earliest possible bridge opening to achieve seismic safety and are not an admission by the Department of any errors or omissions in the Contract Specifications.

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file: 05.03.01, 26.05, 49.171

CONTRACT CHANGE ORDER

Change Requested by: Engineer

CCO: 171 Suppl. No. 0 Contract No. 04 – 0120F4 Road SF-80-13.2/13.9 **FED. AID LOC.:**

To: **AMERICAN BRIDGE/FLUOR ENTERPRISES INC A JOINT VENTURE**

You are directed to make the following changes from the plans and specifications or do the following described work not included in the plans and specifications for this contract. ***NOTE: This change order is not effective until approved by the Engineer.***

Description of work to be done, estimate of quantities and prices to be paid. (Segregate between additional work at contract price, agreed price and force account.) Unless otherwise stated, rates for rental of equipment cover only such time as equipment is actually used and no allowance will be made for idle time. This last percentage shown is the net accumulated increase or decrease from the original quantity in the Engineer's Estimate.

This change revises Special Provisions section 10-1.13, "Progress Schedule (Critical Path Method)

Adjustment of Compensation at Lump Sum:

The Department and the Contractor agree to mutually act to mitigate all potential impacts to the "Readiness for Seismic Safety Opening Maximum Incentive Date (SSO) (August 28, 2013)," and the "Contract Completion Date (CCD) (August 24, 2014)" to the maximum extent possible, regardless of the cause or the party responsible for the impact. If such mutual acts by the parties do not fully mitigate said potential impacts, a commensurate time extension to the SSO date and/or the CCD as well as an adjustment in compensation, will be made in accordance with the provisions of the Contract and this CCO.

Contractor has the right to achieve the CCD early. Should this early completion date (defined as "Forecast Contract Completion Date") be impacted by Extra Work or by any act or omission by the Engineer, the Contractor shall be compensated actual and unavoidable damages, for extending the "Forecast Contract Completion Date". The Contractor's Monthly Schedule Updates shall be the mechanism by which the "Forecast Contract Completion Date" is determined by the parties.

Replace section 10-1.13, "Progress Schedule (Critical Path Method) with the following:

10-1.13 PROGRESS SCHEDULE (CRITICAL PATH METHOD)

Progress schedules will be required for this contract. Progress schedules shall utilize the Critical Path Method (CPM). Attention is directed to "Cooperation," and "Obstructions" of these special provisions. Nothing in these special provisions shall be construed as relieving the Contractor from the responsibilities specified in Section 7, "Legal Relations and Responsibility," of the Standard Specifications. All schedules are required to reflect a reasonable plan to execute the contract scope of work. The Contractor shall be solely responsible for the content of the schedules and the execution of all contract requirements.
The provisions in Section 8-1.04, "Progress Schedule," of the Standard Specifications shall not apply.

DEFINITIONS

The following definitions apply to this section "Progress Schedule (Critical Path Method)":

A. Activity: Any task, or portion of a project, which takes time to complete.
B. Baseline Schedule: The initial CPM schedule representing the Contractor's original work plan, as accepted by the Engineer.
C. Controlling Operation: The activity considered at the time by the Engineer, within that series of activities defined as the critical path, which if delayed or prolonged, will delay the time of completion of the contract.
D. Critical Path: The series of activities, which determines the earliest completion of the contract (Forecast Completion Date). This is the longest path of activities having the least amount of float.
E. Critical Path Method: A mathematical calculation to determine the earliest completion of the contract represented by a graphic representation of the sequence of activities that shows the interrelationships and interdependencies of the elements composing a project.
F. Contract Completion Date: The current extended date for completion of the contract shown on the weekly statement of working days furnished by the Engineer in accordance with Section 8-1.06, "Time of Completion," of the Standard Specifications.
G. Early Completion Time: The difference in time between the current contract completion date and the Contractor's scheduled early forecast completion date as shown on the accepted baseline schedule, or schedule updates and revisions.
H. Float: The amount of time between the early start date and the late start date, or the early finish date and the late finish date, of any activity or group of activities in the network.
I. Scheduled Completion Date: The completion date of the last scheduled work activity identified on the critical path.
J. Free Float: The amount of time an activity can be delayed before affecting a subsequent activity.
K. Hammock Activity: An activity added to the network to span an existing group of activities for summarizing purposes.
L. Milestone: A marker in a network, which is typically used to mark a point in time or denote the beginning or end of a sequence of activities. A milestone has zero duration, but will otherwise function in the network as if it were an activity.
M. Revision: A change in the future portion of the schedule that modifies logic, adds or deletes activities, or alters activities, sequences, or durations.
N. Tabular Listing: A report showing schedule activities, their relationships, durations, scheduled and actual dates, and float.
O. Total Float: The amount of time that an activity may be delayed without affecting the total project duration of the critical path.

P. Update Schedule: The modification of the CPM progress schedule through a regular review to incorporate actual progress to date by activity and to reflect the current plan to complete the project.
Q. Time Scaled Logic Diagram: A schematic display of the logical relationships of project activities, drawn from left to right to reflect project chronology with the positioning and length of the activity representing its duration.
R. Bar Chart (Gantt Chart): A graphic display of scheduled-related information, activities or other project elements are listed down the left side of the chart, dates are shown across the top, and activity durations are shown as date-placed horizontal bars.
S. Near Critical Path: A path having 30 days or less of total float.
T. Delay: The time period during which some part of the construction project has been extended beyond what was originally planned due to unanticipated circumstances. A delay occurs when the respective activity or group of activities, requiring additional time, impacts the completion of the successor construction activity and also extend the scheduled contract completion date.
U. Data date: The day after the date through which a schedule is current. Everything occurring earlier than the data date is "as-built" and everything on or after the data date is "planned."
V. Narrative Report: A document submitted with each schedule that discusses topics related to project progress and scheduling.
W. State Owned Float Activity: The activity documenting time saved on the critical path by actions of the State. It is the last activity prior to the scheduled completion date.
X. Time Impact Analysis: A schedule and narrative report developed specifically to demonstrate what effect a proposed change or delay has on the milestone dates and/or current scheduled completion dates.

The Engineer will schedule and conduct a Preconstruction Scheduling Conference with the Contractor's Project Manager and Construction Scheduler within seven days after the bidder has received the contract for execution. At this meeting, the requirements of this section of the special provisions will be reviewed with the Contractor. The Contractor shall be prepared to discuss its schedule methodology, proposed sequence of operations, the activity identification system for labeling all work activities, the schedule file numbering system, and any deviations it proposes to make from the Stage Construction Plans. The Engineer will submit a scheduling shell project on electronic medium, displaying an activity code dictionary consisting of fields populated with the Caltrans scheduling codes, filters, layouts, report formats, contract milestones, and a resource dictionary. The Contractor shall utilize these codes, filters, layouts, etc. and may add other codes as necessary, to group and organize the work activities. Periodically the Engineer may request the Contractor to utilize additional filters, layouts or activity codes to be able to further group or summarize work activities.
Also, the Engineer and the Contractor shall review the requirements for all submittals applicable to the contract and discuss their respective preparation and review durations. All submittals and reviews are to be reflected on the Interim Baseline Schedule and the Baseline Schedule.

GENERAL SCHEDULE ITEMS
The following items are applicable to all schedules:

A. Activity identification numbers for deleted activities are not to be reused. Added activities shall be assigned a new and unique activity identification number.
B. Activity descriptions are not to be revised when the scope of the activity is changed. The existing activity shall be deleted and a new activity shall be added.
C. When forecasting new durations for activities that have not started, the original duration field shall be revised.
D. All Resource requirements shall be included for all new construction activities.
E. All activities shall have durations of not more than 20 days and not less than one day unless permitted otherwise by the Engineer.
F. All activities in the schedule, with the exception of the first and last activities, shall have a minimum of one predecessor and a minimum of one successor.
H. Negative lags shall not be assigned for any activity relationships.
I. All out of sequence activities identified on the scheduling and leveling report shall be reviewed and their relationships either verified or changed.
J. The Contractor shall not add job inefficiencies or weather days to a project calendar without prior approval by the Engineer.
K. Offsite fabrication and material/equipment delivery activities shall be sufficiently detailed to allow monitoring of schedule progress.
L. The Contractor shall provide to the Engineer ~~two copies~~ one copy of all schedules on electronic medium, together with printed copies of the network diagrams or bar charts and tabular reports described under "Project Schedule Reports", and the Schedule Narrative Report.

The Engineer's review and acceptance of schedules shall not waive any contract requirements and shall not relieve the Contractor of any obligation thereunder or responsibility for submitting complete and accurate information. Schedules that are rejected shall be corrected by the Contractor and resubmitted to the Engineer within 5 days of notification by the Engineer, at which time a new review will begin. Errors or omissions on schedules shall not relieve the Contractor from finishing all work within the time limit specified for completion of the contract. If, after a schedule has been accepted by the Engineer, either the Contractor ~~of~~ or the Engineer discover that any aspect of the schedule has an error or omission, it shall be corrected by the Contractor on the next update schedule.

INTERIM BASELINE SCHEDULE

Within 15 days after approval of the contract, the Contractor shall submit to the Engineer an Interim Baseline Project Schedule which will serve as the progress schedule for the first 120 days of the project, or until the Baseline Schedule is accepted, whichever is sooner. The Interim Baseline Schedule shall utilize the critical path method of scheduling. The Interim Baseline Schedule shall depict how the Contractor plans to perform the work for the first 120 days of the contract. Additionally, the Interim Baseline Schedule shall show all required submittals working drawings, and review periods, and shall provide for all permits, and other non-work activities necessary to begin the work. The Contractor shall also submit a Summary Schedule, reflecting the duration of the contract, grouped by major areas of the project identified by the scheduling codes provided in the Caltrans scheduling codes or as defined by the Engineer. This summary schedule is for information purposes only and is to be used as a reference until the Baseline Schedule is accepted.

The Interim Baseline Schedule submittal shall include the data files used to generate the schedule on electronic medium.

The Engineer shall be allowed 10 days to review the schedule and to provide comments, including the Contractor's application of the supplied activity codes. All comments are to be implemented into the Baseline Schedule. Re-submittal of the Interim Baseline Schedule is not required. Late review of the Interim Baseline Schedule shall not restrain the submittal of the Baseline Schedule. No contract payments shall be made to the Contractor until a Interim Baseline Schedule is submitted in accordance with the above requirements.

BASELINE SCHEDULE

Within 90days, after approval of the contract, the Contractor shall submit to the Engineer a Baseline Project Schedule including the incorporation of all comments provided to the Interim Baseline Schedule. The Baseline Schedule shall have a data date of the day prior to the first working day of the contract. The schedule shall not include any actual start dates, actual finish dates, or constraint dates (except for Contract Milestone dates) and activities scheduled to start or finish between the data date and the run date shall reflect dates that can be attained. The Baseline Schedule shall meet interim milestone dates, contract milestone dates, stage construction requirements, internal time constraints, show logical sequence of activities, and must not extend beyond the number of days originally provided for in the contract.

All task activities shall be assigned to a project calendar. Each calendar shall identify a workweek, and holidays. Different calendars shall be used for work activities that occur on different work schedules. Activities for the preparation and the review of submittals; offsite fabrication, and material/equipment deliveries are to be assigned to the same calendar unless approved by the Engineer. All non-activity periods for Environmental work restrictions shall be identified with the appropriate calendars.

The Baseline CPM Schedule submitted by the Contractor shall have a sufficient number of activities to assure adequate planning of the project and to permit monitoring and evaluation of progress and the analysis of time impacts. The Baseline Schedule shall depict how the Contractor plans to complete the whole work involved, and shall show all activities that define the critical path. Multiple critical paths and near-critical paths shall be kept to a minimum, as determined by the Engineer.

State owned float shall be considered a resource for the exclusive use of the State. The Engineer may accrue State owned float by the early completion of review of any type of required submittal when it saves time on the critical path. The Engineer will document State owned float by directing the Contractor to update the State owned float activity on the next schedule update. The Contractor shall include a log of the action on the State owned float activity and include a discussion of the actions in the narrative report. The Engineer may use State owned float to mitigate past or future State delays by offsetting potential time extensions.

The Contractor shall be responsible for assuring that all work sequences are logical and the network shows a coordinated plan for complete performance of the work. Failure of the Contractor to include any element of work required for the performance of the contract in the network shall not relieve the Contractor from completing all work within the time limit specified for completion of the contract. If the Contractor fails to define any element of work, activity or logic, the Contractor in the next monthly update ~~or revision~~ of the schedule shall correct it.

The Baseline Schedule shall be supplemented with resource allocations for every task activity to a level of detail that facilitates report generation based on labor craft and equipment class for the Contractor and subcontractors.

The Contractor shall optimize labor to reflect a reasonable plan for accomplishing the work of the contract and to assure that resources are not over committed in concurrent activities. The Contractor shall not create hammock activities for the purpose of resources loading.

The Baseline Schedule shall not attribute negative float to any activity.

Along with the baseline progress schedule, the Contractor shall also submit to the Engineer time-scaled resource histograms of the labor crafts and equipment to be utilized on the contract.

Each schedule submitted to the Engineer will comply with all limits imposed by the contract, with all specified intermediate milestone and contract completion dates, and with all constraints, restraints or sequences included in the contract. The degree of detail shall include factors including, but not limited to:

A. Physical breakdown of the project;
B. Contract milestones and completion dates, substantial completion dates, constraints, restraints, sequences of work shown in the contract, the planned substantial completion date, and the final completion date;
C. Type of work to be performed, the sequences, and the major subcontractors involved;
D. All purchases, submittals, submittal reviews, manufacture, fabrication, tests, delivery, and installation activities for all major materials and equipment, including submittal of requests for audits of manufacturers and fabricators in conformance with "Manufacturing and Fabrication Qualification Audit for Materials" of these special provisions;

E. Preparation, submittal and approval of shop and working drawings and material samples, showing time, as specified elsewhere, for the Engineer's review.
F. Identification of interfaces and dependencies with preceding, concurrent and follow-on contractors, railroads, and utilities as shown on the plans or specified in the specifications;
G. Identification of each and every utility relocation and interface as a separate activity, including activity description and responsibility coding that identifies the type of utility and the name of the utility company involved;
H. Actual tests, submission of test reports, and approval of test results;
I. All start-up, testing, training, and assistance required under the Contract;
J. Punchlist and final clean-up;
K. Identification of any manpower, material, or equipment restrictions, as well as any activity requiring unusual shift work, such as double shifts, 6-day weeks, specified overtime, or work at times other than regular days or hours;
L. Identification of each and every ramp closing and opening event as a separate one day activity, including designation by activity coding and description that it is a north-bound, south-bound, east-bound, west-bound, and entry or exit ramp activity;
M. Separate resources graphs for the Contract's labor, equipment and critical path labor, with an accompanying analysis of each and explanation for any variances;
N. Equipment and labor shall be differentiated by a cost account code within the resource dictionary.
O. State owned float as the last activity in the schedule, at the end of which is the Scheduled Completion Date.

The Engineer will be allowed 30 days to review and accept or reject the baseline project schedule submitted. Rejected schedules shall be resubmitted to the Engineer within 5 days, at which time a new 15-day review period by the Engineer will begin.

PROJECT SCHEDULE REPORTS

Schedules submitted to the Engineer including Interim Baseline, Baseline, and update schedules shall include time scaled network diagrams or bar charts in a layout format requested by the Engineer ~~. The network diagrams or bar charts submitted to the Engineer shall also be accompanied by four computer-generated mathematical analysis tabular reports for each activity included in the project schedule. The reports (215-mm x 280-mm size) shall include a network diagram report showing the activity columns only, a predecessor and successor report, a resource report (Interim Baseline and Baseline Schedules),~~ and a scheduling and leveling calculation report. The network diagram reports shall include, at a minimum, the following for each activity:

A. Activity number and description;
B. Activity codes;
C. Original, actual and remaining durations;
D. Early start date (by calendar date);
E. Early finish date (by calendar date);
F. Actual start date (by calendar date);
G. Actual finish date (by calendar date);
H. Late start date (by calendar date);
I. Late finish date (by calendar date);
J. Identify activity calendar ID;
K. Total Float and Free Float, in work days; and
L. Percentage complete.

Network diagrams or bar charts shall be sorted and grouped in a format requested by the Engineer reflecting the project breakdown per the Caltrans activity codes. They shall show a continuous flow of information from left to right per the project sorting and grouping codes; e.g., project milestones, submittals sub-grouped by description, and the construction activities sub-grouped by the scope breakdown structure. The primary paths of criticality shall be clearly and graphically identified on the diagrams or charts. ~~The network diagram or bar chart shall be prepared on E-size sheets (914-mm x 1219-mm), shall have a title block in the lower right-hand corner, and a timeline on each page. Exceptions to the size of the network sheets and the use of computer graphics to generate the networks or bar charts shall be subject to the approval of the Engineer.~~
Schedule network diagrams the tabular reports shall be submitted to the Engineer for acceptance in the following quantities:

A. ~~2~~ 1 sets of the Network Diagrams or Bar Charts; and
~~B. 2 copies of the tabular reports (215-mm x 280-mm size); and~~
C. 2 ~~copies~~ 1 copy on electronic medium, each with a backup of the current schedule file.

WEEKLY SCHEDULE MEETINGS

The Engineer and the Contractor shall hold weekly scheduling meetings to discuss the near term schedule activities, to address any long-term schedule issues, and to discuss any relevant technical issues. The Contractor shall develop a rolling 4-weeks schedule identifying the previous week worked and a 3-week look ahead. It shall provide sufficient detail to include the actual and planned activities of the

Contractor and all the subcontractors for offsite and construction activities, addressing all activities to be performed and to identify issues requiring engineering action or input.
Each activity in the 4 week rolling schedule should be identified by an associated CPM schedule activity ID numbering system. This schedule should not be hand written. The Contractor shall utilize a schedule layout as acceptable by the Engineer. The schedule shall be electronically submitted to the Engineer one day prior to the scheduled meeting date.

~~**MONTHLY CASH FLOW REPORTS**~~
~~The Contractor shall allocate a portion of each bid item cost to the appropriate schedule activities. A minimum of one activity shall be added to the schedule for each bid item. The total of all activity costs shall equal the total contract bid amount. This information shall be sufficient to generate a monthly cash flow report showing the anticipated monthly contract progress payments. The format for the report shall be acceptable to the Engineer. Actual Progress Payments shall be made in accordance with Standard Specification 9-1.06, Partial Payments.~~

MONTHLY UPDATE/REVISION SCHEDULES
The Contractor shall submit a Monthly Update Schedule to the Engineer once in each month within 5 days of the data date. The proposed update schedule prepared by the Contractor shall include all information available as of the 20th day of the month, or other data date as established by the Engineer. A detailed list of all proposed schedule changes such as logic, duration, lead/lag, forecast completion date, additions and deletions shall be submitted with the update.
The Monthly Update Schedule submitted to the Engineer will be accompanied by a Schedule Narrative Report. The report shall describe the physical progress during the report period, plans for continuing the work during the forthcoming report period, schedule revisions and their impacts to the schedule, actions planned to correct any negative float, and an explanation of potential delays or problems and their estimated impact on performance, milestone completion dates, forecast completion date, and the overall project completion date. In addition, alternatives for possible schedule recovery to mitigate any potential delay or cost increases shall be included for consideration by the Engineer. The report shall follow the outline set forth below:
Contractor's Schedule Narrative Report Outline:

A. Contractor's ~~Transmittal~~ Submittal Letter;
B. Work completed during the period;
C. Description of the current critical path;
D. Description of current problem areas and anticipated delays;
~~E. Current and anticipated delays;~~
   1. Cause of the delay;
   2. Corrective action and schedule adjustments to correct the delay; and
   3. Impact of the delay on other activities, milestones, and completion dates;
~~F~~E. Changes in construction sequences;
~~G. Pending items and status thereof;~~
   ~~1. Permits;~~
   ~~2. Change Orders;~~
   ~~3. Time Extensions; and~~
   ~~4. Non-Compliance Notices;~~
   ~~5. Notice of Potential Claims~~
~~H~~F. Contract completion date(s) status;
   1. Ahead of schedule and number of days; and
   2. Behind schedule and number of days; and
~~I~~G. Include updated Network Diagram and Reports.
~~J~~H. Response to Previous Schedule Comments
I. Cash flow report showing actual payments and forecasted billings (upon request from the Engineer). The format for the report shall be acceptable to the Engineer.

Portions of the network diagram on which all activities are complete need not be reprinted and submitted in subsequent updates. However, the submitted schedule and the related reports shall constitute a clear record of progress of the work from award of contract to final completion.
On a date determined by the Engineer, the Contractor shall meet with the Engineer to review the monthly schedule update. At the monthly progress meeting, the Contractor and the Engineer shall review the updated schedule and shall discuss the content of the Narrative Report. The Engineer will be allowed 10 days after the meeting to review and accept or reject the update schedule submitted. Rejected schedules shall be resubmitted to the Engineer within 5 days, at which time a new 5-day review period by the Engineer will begin. All efforts shall be made between the Engineer and the Contractor to complete the review and the acceptance process prior to the next update schedule data date. To expedite the process, a second meeting between the Engineer and the Contractor may be held.

~~SCHEDULE REVISIONS~~

~~If the Contractor desires to make a change to the accepted schedule, the Contractor shall request permission from the Engineer in writing, stating the reasons for the change, and proposed revisions to activities, logic and duration. The Contractor shall submit for acceptance an analysis showing the effect of the revisions on the entire project. The analysis shall include:~~

~~A. An updated schedule not including the revisions. The schedule shall have a data date just prior to implementing the proposed revisions and includes a project completion date;~~
~~B. A revised schedule that includes the proposed revisions. The schedule will have the same data date as the updated schedule and include a project completion date;~~
~~C. The Contractor should add resources for all new activities, also adjust resources for those activities that their remaining duration were changed;~~
~~D. A narrative explanation of the revisions and their impact to the schedule;~~
~~E. Computer files of the updated schedule and the revised schedule sequentially numbered or renamed for archive (record) purposes.~~

~~The Engineer will provide a response within 10 days to Contractor's proposed schedule revisions.~~
~~Within 15 days, the Contractor shall submit a revised CPM network for approval when requested by the Engineer, or when any of the following occurs:~~

~~A. There is a significant change in the Contractor's operations that will affect the critical path;~~
~~B. The current updated schedule indicates that the contract progress is 4 weeks or more behind the planned schedule, as determined by the Engineer; or~~
~~C. The Engineer determines that an approved or anticipated change will impact the critical path, milestone or completion dates, contract progress, or work by other contractors.~~

~~The Engineer shall be allowed 10 days to review and accept or reject a schedule revision. Rejected schedule revisions shall be revised and resubmitted to the Engineer within 10 days, at which time a new 10 day review period by the Engineer will begin. Only upon approval of a change by the Engineer shall it be reflected in the next schedule update submitted by the Contractor. The revised schedule shall also include a narrative explanation of the revisions and their impact to the schedule.~~

TIME IMPACT ANALYSIS

When the Contractor requests a time adjustment due to contract change orders or delayed activities or if the Contractor or the Engineer considers that an approved or anticipated change will impact the critical path or contract progress, the Contractor shall submit to the Engineer a written Time Impact Analysis illustrating the impact of each change or delay to the current contract completion date or milestone completion dates (including Lift 13/14 shipment of July 11, 2011 and Readiness for Seismic Safety Opening of August 28, 2013), utilizing the current accepted schedule. Each Time Impact Analysis shall include a schedule update (an accepted schedule with a data date within the previous month of the event) reflecting the "before conditions", and schedule revision reflecting the "after condition", both with the same data dates, demonstrating how the Contractor proposes to incorporate the change order or delay into the current schedule. The schedule revision shall include the sequence of activities and any revisions to the existing activities to demonstrate the impact of the delay, or change into the schedule. The Time Impact Analysis shall also include proposed mitigation measures or work arounds including but not limited to alternate work calendars, re-sequencing of other activities, or performing work activities out-of-sequence to minimize the impact of the change order or the delayed activities.

Each Time Impact Analysis shall demonstrate the estimated or actual time impact based on the events of delay, the estimated or actual date of the contract change order work performance, the status of construction at that point in time, and the event time computation of all activities affected by the change or delay. The event times used in the analysis shall be those included in the latest update of the current schedule in effect at the time the change or delay was encountered.

Time extensions will be granted only to the extent that equitable time adjustments for the activity or activities affected exceed the total or remaining float along the critical path of activities from the time of actual delay, or from the time the contract change order work is performed. Mitigation measures shall be included in the analysis. The Time Impact Analysis shall also consider the use of State owned float as a mitigation measure. Time extensions will not be granted nor will delay damages be paid unless:

A. The delay is beyond the control and without the fault or negligence of the Contractor and its subcontractors or suppliers, at any tier; and
B. The delay extends the actual performance of the work beyond the currently approved contract completion date.
C. The delay impacts a fabrication or construction activity – delays to the Contractor's submittal or shop drawing process must impact a successor fabrication or construction activity. The Time Impact Analysis shall be based on the impact to fabrication or construction activities.

Time Impact Analyses shall be submitted within 15 days after the delay occurs or after initiation of the contract change order. The schedule files will be submitted on electronic medium along with the Time Impact Analysis, which shall include a narrative description of the delay, its impact on contract completion or milestone dates and proposed mitigation measures. Mitigation measures utilized to

minimize the impact of the change order or delay shall include but are not limited to work arounds, re-sequencing of work, alternate work calendars, increased resources, expedited procurement and use of State owned float.

A response to each Time Impact Analysis by the Engineer will be made within 15 days after receipt of the Time Impact Analysis. The Engineer's review shall utilize actual data unless it is appropriate to use estimated data. Resolution of each Time Impact Analysis by the Engineer shall be completed after all effects of the disruption are documented, which may include mitigation measures. ~~A copy of the Time Impact Analysis accepted by the Engineer shall be returned to the Contractor and the accepted schedule revisions illustrating the impact of the contract change orders or delays shall be incorporated into the project schedule during the first update after acceptance.~~ Until such time that the Contractor provides the analysis, the Engineer may, at his option, construct and utilize the project as-built schedule or other method to determine adjustments in contract time.

FINAL SCHEDULE UPDATE

Within 15 days after the acceptance of the contract by the Director, the Contractor shall submit a final update of the schedule with actual start and actual finish dates for all activities. Two or more separate schedules will be accepted as the final as-built condition. The first schedule will reflect the as-built condition of the Project with actual start and actual finish dates for all activities, as agreed by the Contractor and the Engineer, as of October 2010 and the remaining (Final) schedule(s) will reflect the as-built condition of the Project with actual start and actual finish dates for all activities from October 2010 until Project Completion. ~~This~~ The final as-built schedule submission shall be accompanied by a certification, signed by an officer of the company and the Contractor's Project Manager stating "To the best of my knowledge, the enclosed final update of the project schedule reflects the actual start and completion dates of the activities contained herein."

EQUIPMENT AND SOFTWARE

The Contractor shall provide for the State's exclusive possession and use a complete computer system specifically capable of creating, storing, updating and producing CPM schedules utilizing the latest hardware and software technology, as agreed to by the Engineer and the Contractor. ~~Before delivery and setup of the computer system, the Contractor shall submit to the Engineer for approval a detailed list of all computer hardware and software the Contractor proposes to furnish. The minimum computer system to be furnished shall include the following:~~

~~A. Complete computer system, including keyboard, mouse, 530 mm color SVGA monitor (1,024x768 pixels), current Intel Pentium IV micro processor chip, or equivalent or later;~~
~~B. Computer operating system software, compatible with the selected processing unit, for Windows NT/Windows 2000, equivalent;~~
~~C. Minimum one gigbyte (1000 MB) of random access memory (RAM);~~
~~D. A 20 gigabyte minimum hard disk drive, a 1.44 megabyte 90 mm floppy disk drive, 32x speed minimum CD-RW drive, Ethernet card, two UBCUSB ports, and 56k modem;~~
~~E. A color ink jet plotter with a minimum 36 Megabytes RAM, capable of 300 dots per inch color, 600 dots per inch monochrome, or equivalent. Capable of printing fully legible, time scaled charts, and network diagrams, in four colors, with a minimum size of 914 mm by 1219 mm (E size) and is compatible with the selected system. Plotter paper and ink cartridges will be provided throughout the contract. HP Designjet 1055 CM, equivalent or later~~
~~F. CPM software shall be Primavera Project Planner, Version 3.1 , or later;~~
~~G. Scheduler Analyzer Pro or equivalent a suite of programs to assist in schedule analysis, the latest version for Windows NT/ Windows 2000, or later and,~~
~~H. Microsoft Office software, the latest version for Windows NT/Windows 2000, or later, and McAfee Virus software or equivalent.~~

The computer hardware and software furnished shall be compatible with that used by the Contractor for the production of the CPM progress schedule required by the Contract, and shall include original instruction manuals and other documentation normally provided with the software.

The Contractor shall furnish, install, set up, maintain and repair the computer hardware and software ready for use at a location determined by the Engineer. The hardware and software shall be installed and ready for use within 30 days of the contract award. The Contractor shall provide 24 hours of formal training for the Engineer, and three other agents of the department designated by the Engineer, in the use of the hardware and software to include schedule analysis, reporting, and resource and cost allocations. An authorized vendor of Primavera Project Planner shall perform the training.

All computer hardware and software furnished shall remain the property of the Contractor and shall be removed by the Contractor upon acceptance of the contract when no claims involving contract progress are pending. When claims involving contract progress are pending, computer hardware or software shall not be removed until the final estimate has been submitted to the Contractor.

PAYMENT

Progress schedule (critical path) will be paid for at a lump sum price. The contract lump sum price paid for progress schedule (critical path) shall include full compensation for all labor, materials (including computer hardware and software), tools, equipment, and incidentals; and for doing all the work involved in preparing, furnishing, updating and revising CPM progress schedules. Also for maintaining and repairing the computer hardware and training the Engineer in the use of the computer hardware and software as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

CONTRACT CHANGE ORDER

Change Requested by: Engineer

CCO: 171 **Suppl. No.** 0 **Contract No.** 04 – 0120F4 **Road** SF-80-13.2/13.9 **FED. AID LOC.:**

Payments for progress schedule (critical path) will be made as follows:

A. Interim baseline schedule accepted, then 10 percent payment for progress schedule (critical path) will be made.
B. Baseline schedule accepted, then 10 percent payment for progress schedule (critical path) will be made.
C. Monthly update schedules accepted, then 75 percent payment for progress schedule (critical path) will be made equally for each update.
D. Final schedule update accepted, then 5 percent payment for progress schedule (critical path) will be made.

The Department will retain an amount equal to $500,000 for each estimate period in which the Contractor fails to conform to the provisions of this section, including failure to submit an interim baseline, baseline, revised or updated CPM schedule conforming to the requirements of this section, as determined by the Engineer. Retentions for failure to submit acceptable CPM schedules shall be in additional to all other retentions provided for in the contract. The retention for failure to submit acceptable CPM schedules will be released for payment on the next monthly estimate for partial payment following the date that acceptable CPM schedules are submitted to the Engineer.
The adjustment provisions in Section 4-1.03, "Changes," of the Standard Specifications, shall not apply to the item of progress schedule (critical path). Adjustments in compensation for the project schedule will not be made for any increased or decreased work ordered by the Engineer in furnishing project schedules.

Total Cost for Increase in Contract Item.....$0

Estimated Cost: **Increase** ☐ **Decrease** ☐ **$0.00**

By reason of this order the time of completion will be adjusted as follows: **0 Days**

Submitted by

Signature Kannu Balan **Resident Engineer** Kannu Balan, Senior T.E. **Date** 12-20-10

Approval Recommended by

Signature Pete Siegenthal **Supervising Bridge Engineer** Peter Siegenthaler, Prin. T.E. **Date** 12-20-10

Engineer Approval by

Signature Pete Siegenthal **Principal Transportation Engineer** Peter Siegenthaler, Prin. T.E. **Date** 1-21-11

We the undersigned contractor, have given careful consideration to the change proposed and agree, if this proposal is approved, that we will provide all equipment, furnish the materials, except as otherwise be noted above, and perform all services necessary for the work above specified, and will accept as full payment therefor the prices shown above.

NOTE: If you, the contractor, do not sign acceptance of this order, your attention is directed to the requirements of the specifications as to proceeding with the ordered work and filing a written protest within the time therein specified.

Contractor Acceptance by

Signature (Print name and title) BRIAN A. PETERSEN - PROJECT DIRECTOR **Date** 17 JAN